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ABSTRACT

The pre- and post-1985 Florida Teacher Certification Examination (FTCE) scores of black first-time test takers (BFTTs) from a historically black institution (N=130) were compared on the four subtests of the test (62 candidates took the pre-1985 and 68 took the post-1985). In addition, institution results were compared with the scores of all state BFTTs (N=3,025) for the two time periods. The purpose was to determine the effect of an intervention program designed to teach the state identified essential teaching competencies--the Competency Based/Computer Assisted Teacher Education Program--on FTCE results. Statistically significant differences were found in the performance of the institution sample pre- and post-1985 on the subtests addressed by the intervention program. A statistically significant sex difference was found on the mathematics subtest. Moreover, the institution's overall passing rate increased by 100%, while the state overall passing rate for BFTTs remained the same pre- and post-1985. Three tables summarize data. (SLD)

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Improving Teacher Certification Examination Scores of Minority Candidates: Results of an Intervention Program

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The Pre 1985 and Post 1985 Florida Teacher Certification Examination scores of black first-time test takers from a historically black institution (N = 130) were compared on the four subtests of the test. In addition, institution results were compared with the scores of all state black first-time test takers (N = 3,025) for the two time periods. The purpose was to determine the effect of an intervention program designed to teach the state identified essential teaching competencies. Statistically significant differences were found in the performance of the institution sample Pre and Post 1985 on the subtests addressed by the intervention program. A statistically significant sex difference between males and females was also found on the Mathematics Subtest. Moreover, the institution's overall passing rate increased by 100% while the state overall passing rate for black first-time test takers remained the same Pre and Post 1985.

Paper to be presented at the 1988 annual meeting of the American Association of Colleges for Teacher Education

Improving Teacher Certification Examination Scores of Minority Candidates: Results of an Intervention Program

Sigita Ramanauskas, Ph.D.

Introduction

Since November 1980 the State Department of Education has administered the Florida Teacher Certification Examination (FTCE). Department of Education reports indicate that the passing rate of first-time black candidates is lower than that of other groups. For example, a report issued December 5, 1986 concerning the October 11, 1986 test administration states that 38% of first-time black candidates passed the entire test compared to 81% of all first-time candidates. Similar results have been reported in other states (Gifford, 1986). Poor performance on certification tests, coupled with higher admission criteria into teacher education programs as well as the lure of higher paying careers, have turned black teachers into a "vanishing breed" or "endangered species" (Mercer, 1982; Cole, 1986).

Many possible solutions have been proposed to the dilemma of a shrinking pool of minority teachers in a society where rapid demographic changes are dramatically increasing the pool of minority students (Dilworth, 1986; Gifford, 1986). Among these are curricular reforms to include essential teaching competencies (Witty, 1980; Brown, 1984). Rather than blaming the victims, changing the institutions that prepare students should be undertaken (Gifford, 1986). Thereby, "an effective

instructional sequence built on competency specifications, would allow would-be teachers to master the tests" (Popham, 1984).

Despite these recommendations, few reports of curricular changes appear in the literature. Better quality of current programs is suspected by Gifford (1986) who bases his statement on increases in certification test scores in California by all candidates over the years. The only intervention program which has been described in depth is the one conducted at Grambling State University, Louisiana (1986) in which student assessment, faculty development, curricular revisions, instructional development, program monitoring and evaluation were all improved, resulting in an increased certification test passing rate (Spencer, 1986).

The project described in the present study was similarly broad in scope. The faculty development component will not be described; only the curricular aspect of the program. A historically black institution applied for and received a Title III grant in 1983. One of the funded objectives was to develop a curriculum based on essential teaching competencies; another to construct instructional materials, including computer modules, to aid in the teaching of skills evaluated on the FTCE. The project title was Competency Based/Computer Assisted Teacher Education (CB/CATE) Program. To this end, faculty members and the project director spent the 1983-1984 academic year establishing a computer laboratory and writing instructional materials using Florida State Department of Education supplied specifications for essential teaching competencies. By the beginning of the 1984-85 academic year (Fall, 1984) the materials were ready. They were correlated to

particular courses in the core curriculum common to all 14 teacher education programs offered at the institution. It was the responsibility of these faculty members to teach the concepts and assign the materials.

Subjects

The purpose of the present study was to conduct a partial evaluation of the impact of the CB/CATE Program on FTCE results. Therefore, the subjects of this study consisted of all candidates from this historically black institution whose FTCE scores had been sent to the college by the Florida State Department of Education. These subjects were divided into two groups; candidates who took the FTCE "Pre '85" (1981-1984) (N = 62) and those who took the FTCE "Post '85" (N = 68). Subjects who took the FTCE "Post '85" but graduated "Pre '85" were eliminated from the study because it would have been impossible to evaluate their exposure or non-exposure to the CB/CATE Program materials since hard copies of preparation materials had been distributed to some earlier graduates who had not yet taken the examination. Only first-time scores were tabulated. A study of the retake process and effect on scores can be the content of a future follow-up study since all teacher candidates at this institution pass the FTCE before student teaching placement. No attempt was made to match the subjects in the two groups on any variables. The assumption was made that most relevant variables would be randomly distributed between both groups.

Hypotheses

The following null hypotheses were formulated:

1. That there would be no significant difference in the

distribution of pass and fail scores between the "Pre '85 and "Post '85" groups of subjects for each of the four subtests of the FTCE.

2. That there would be no significant difference in the distribution of pass and fail scores between males and females taking the FTCE for each of the four subtests.

Method

The following data were recorded for each subject: ID, sex, year of first test, year of graduation, pass or fail on each of the four subtests (Reading, Writing, Mathematics, Professional Education). In addition, percent of candidates passing each subtest (as reported in a State Department of Education Memorandum dated December 1986) for all Florida first-time black test takers was recalculated to reflect the two test periods "Pre" and "Post '85." The institution's data were then analyzed in terms of frequency counts for each variable; contingency tables or crosstabulations were also constructed showing the joint distribution of several variables. Chi square coefficients were calculated to see whether variables were independent of each other. This aspect of the study was carried out in the Academic Computing Center of the college.

Results

Analyses of the data yielded the following results (see Table 1). There were 62 subjects in the "Pre '85" group and 68 in the "Post '85" group of first-time candidates from the institution, totaling 130. For the Reading Subtest, the obtained distribution of percent passing in the two groups versus that expected by chance is not significant (chi square

of .52). A similar result can be seen for the Writing Subtest where the chi square coefficient is 1.23, indicating that the difference between the expected and obtained proportions of subjects passing the FTCE in the two groups is not significant and could be due to chance variation. However, the Mathematics Subtest analysis yielded a chi square coefficient of 6.67 and a significance level of .009. This indicates that for the subtest, the two variables (performance on the FTCE and year of first test) are not independent but are associated. The difference between expected and obtained distributions of proportions passing and failing in the two testing groups could have occurred by chance only very rarely. Similarly, a chi square of 10.10, and significance level of .001, point to the same conclusion for the Professional Education Subtest. Additional analyses included percent passing or failing the various subtests by sex. These yielded a significant (.038 level) chi square (4.30) for the Mathematics Subtest only (see Table II). In a sample of 130, consisting of 34 males and 96 females, 75% of all males passed the Mathematics Subtest compared to 53% females.

Table III shows the performance of first-time candidates from this institution compared to all Florida first-time black candidates (N=3,025) for each subtest "Pre '85" and "Post '85". It can be seen that the candidates from the subject college made greater gains (between "Pre '85" and "Post '85") than the average black first-time candidate state-wide. The Mathematics Subtest passing rate rose from 47% to 69% for the institution while the state passing average for blacks on this subtest rose from 55% to 57% between these two time periods. In the

area of Professional Education, the state results show a drop in this period from a passing rate of 66% to 59%, while the institution passing rate leaped from 34% to 62%. On the Writing Subtest, state gains were from 71% to 77% while the institution rose from 68% to 77%. However, on the Reading Subtest, the state gains seem to be better, rising from 69% to 81% while the institution gains were from 69% to 75%. On the overall passing rate (i.e. percent passing all four subtests the first time), the institution candidates have also shown good progress between "Pre '85" and "Post '85." Prior to the CB/CATE Program initiation, only 19% of institution candidates passed all four subtests. Before 1985, first-time black candidates state-wide passed all subtests at the rate of 34%. During 1985 and 1986, the state black first-time rate was 36%, while institution candidates passed at the rate of 38%. In other words, the state rate did not change significantly, while the institution passing rate doubled! If the institution passing rate is averaged over all 19 test administrations between 1981 and 1986, the gains between the two time periods are masked and not perceived.

Discussion

In view of the nature of the CB/CATE Program, the results of this study are not surprising. The non-significant differences in the proportion of subjects passing the Writing and Reading Subtests "Pre and Post '85" are probably due to the fact that the competencies these two subtests cover are not addressed in the CB/CATE Program to the extent that the competencies on the other two subtests (Mathematics and Professional Education) are. Perhaps the belief that one cannot "crash teach" writing or reading skills as readily as basic mathematics and

professional education is somewhat responsible. Therefore, most instructional materials developed by the CB/CATE Program were in the professional education and mathematics areas. Moreover, the knowledge that most black candidates are having the greatest difficulty on the mathematics and professional education subtests (Dilworth, 1984) led to the stressing of those particular competencies in the curriculum. This is relected in the results for the mathematics and professional education subtests which indicate that the proportion of subjects passing these subtests "Pre '85" compared to "Post '85" is likely not due to chance; that the difference between expected and obtained frequency distributions means that the two variables (time of test and passing rate) are related for these subtests. It is likely that intervening variables associated with the time factor, such as the intervention of the CB/CATE Program, affected the results. There are other variables (such as the nature of the subjects themselves) which were not investigated. One could argue, for example, that the two groups of subjects ("Pre and Post '85") were not equal, both at the institution and state level, because more stringent state requirements were attracting a different kind of teacher candidate after 1985. That argument however, would still not account for the <u>differential</u> performance of the candidates from the subject institution on the various subtests. In other words, gains would have been noted for all subtests, not only for the ones addressed by the intervention program. Moreover, the passing scores for subtests were raised by the state in October 1983. In addition, the "Post '85" institution sample was a younger group, taking the test a year or two before graduation, whereas

the "Pre '85" group was older, taking the test after graduation. If anything, the younger group should have performed worse; instead, they performed better.

The results pertaining to sex are supported by other studies which report sex differences between males and females, favoring males, in the general area of mathematics performance. Therefore, the current results, showing a significant difference between black males and females passing the Mathematics Subtest over the total combined years reflect this phenomenon. In addition, comparisons with state results show that since 1985, the institution candidates have caught up to and even surpassed black first-time candidates throughout the state in all subtests except reading. These differences between institution and state have yet to be subjected to a statistical analysis for significance in a follow-up study.

Conclusion

The results of the current study show that the first null hypothesis is not rejected for two subtests and is rejected for two subtests. The hypothesis had stated that there would be no significant difference in the distribution of expected and obtained passing scores between the "Pre and Post '85" groups on all subtests. The part rejected deals with two subtests whose passing rates are related significantly to year of testing, namely mathematics and professional education. It is likely that the CB/CATE Program intervention may have been responsible for the difference in performance between "Pre '85" and "Post '85." The second null hypothesis, stating that there would be no significant difference between sexes in the proportion of subjects

passing or failing the various subtests is not rejected for three subtests but is rejected in terms of the mathematics area. Here, a significant association seems to exist between sex and passing rate.

In the future a number of follow-up studies investigating the relationship of subject characteristics and passing rate could be carried out. Since the subject institution has an "open admission" policy and does not have the scholarship resources to attract high achieving minority students, the intervention program gains may not be as dramatic as they possibly could be in a larger institution. In addition, subjects vary in amount of preparation with the CB/CATE Program materials that they experience prior to the test. Despite reported gains, it is the writer's belief that curricular restructuring and use of the available competency based materials have not yet been utilized as effectively as they could be in the preparation of teachers at this institution. These aspects will be studied another time. For now it is important to know that an intervention approach can make a difference, as shown in this study. Since 1985, first time test takers from this institution have been undergraduates who have not yet finished their education program. By the time they finish their core courses and before they are allowed to student teach they are required to pass the total test and are doing so successfully.

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TABLE I

Performance of Subject Institution First-Time Candidates

Pre and Post '85

on Four Subtests of the Florida Teacher Certification Examination

		Pre '85	Post '85	Chi Square	Signific
READ	Pass	69.4%	75.0%	.52	.473
MATH	Pass	46.8%	69.1%	6.67	.009
ED	Pass	33.9%	61.8%	10.10	.001
WRIT	Pass	67.7%	76.5%	1.23	.27
		N - 62	N - 68		

Total N - 130

TABLE II

Performance of Subject Institution First-Time Candidates on the Mathematics Subtest of Florida Teacher Certification Examination by Sex

	FEMALE	MALE
FAIL	46.9%	26.5%
PASS	53.1%	73.5%
N	96	34

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TABLE III

Comparison of Passing Rate of Florida First-Time Black Candidates and Subject Institution Candidates on Florida Teacher Certification Examination

Pre 1985			Post 1985	
State	Institution		State	Institution
55%	47%	MATH	57%	69%
69%	69%	READ	81%	75%
66%	34%	ED	59%	62%
71%	68%	WRIT	77%	77%
34%	19%	ENTIRE	36%	38%

N = 130 (Institution candidates)

N = 3,025 (State black candidates)